## REMARKS

This responds to the Office Action mailed on April 18, 2005.

No claims have been amended, canceled, or added. Claims 4, 6-8, 12-17, and 25-31 were previously withdrawn from consideration. Claims 1-17 and 25-31 are now pending in this application.

### *Information Disclosure Statement*

Applicant submitted a Supplemental Information Disclosure Statement and a 1449 Form on March 23, 2004. Applicant respectfully requests that an initialed copy of the 1449 Form be returned to Applicant's Representatives to indicate that the cited reference has been considered by the Examiner.

### *§103 Rejection of the Claims*

Claims 1-3 and 9-11 were rejected under 35 USC § 103(a) as being unpatentable over Marrs et al. (U.S. 5,355,283) in view of Goldstein et al. (U.S. 5,904,955). Applicant respectfully traverses the rejection and requests the Office to consider the following.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (M.P.E.P. § 2143 8th Ed, Rev.1).

### *Response to Arguments in the Final Office Action*

The Final Office Action (hereinafter, "Office Action") asserts that "Goldstein teaches that the fiber size and aspect ratio can be determined by the specific technical and cost objectives that must be achieved ...." (Office Action at page 7). Applicant respectfully asserts that Goldstein

makes no teaching regarding fiber size or aspect ratio, and therefore the assertion is unfounded. The phrase "aspect ratio" is not found in Goldstein, and neither is any mention of "fiber size". Applicant respectfully asserts that, for a claimed range to be obvious in view of a cited reference, "the claimed ranges 'overlap or lie inside ranges disclosed by the prior art' ". (Office Action at page 4, quoting *In re Wertheim* (citation omitted)). Thus, because there are no "ranges disclosed by the prior art", no prima facie case of obviousness has been established. Withdrawal of the rejections is respectfully requested.

The Office Action has also asserted that although "Goldstein et al. does not disclose the fibers length or width, but discloses that the filler used in the fiber reinforced polymeric resin 48 can be determined by the specific technical cost objectives that must be achieved." (Office Action at page 4). Applicant respectfully disagrees that the "technical costs" etc. that Goldstein discusses does not include parameters on fibers. The following is the quotation from Goldstein that is in context with his discussion of technical costs etc.

> The precise choices of the first and second materials depend upon the specific technical and cost objectives that the device designer must achieve. *Important parameters are molding conditions, adhesion, dielectric strength, moisture and gas permeability, temperature dependence, expansion coefficient, light permeability, chemical stability, and so forth.* Persons of skill in the art understand how these factors vary with choices of material and many such materials are commercially available from numerous sources.

(Goldstein at col. 3, lines 53-62. Emphasis added). Thus, although Goldstein mentions filled encapsulants and finds it necessary to list "important parameters", he does not even mention fibers in his list of important parameters, let alone their sizes and shapes. Withdrawal of the rejections is respectfully requested.

The Office Action has also added a phrase regarding Goldstein's teaching that "fiber reinforced material [48] optimizes the overall ... properties of the finished device as disclosed in col. 3, lines 44-50 ...." (Office Action at page 3). But this statement is taken out of context. Goldstein also states that the first "material 46 is chosen, for example, to optimize adhesion ...." (Goldstein at col. 3, lines 36-36), and Goldstein emphatically states that the "occurrence of substantially un-mixed boundary layer 60 [between material 46 and material 48] is important to the present invention." (Goldstein at col. 5, lines 2-4). Thus, the Office Action has ignored critical information taught by because Goldstein, that both the first material 46 and the second

material 48 are important and must be together and in a specific configuration of an "un-mixed boundary layer 60". Consequently, the use of Goldstein's two-phase material in the instant application would fail due to the complex flow geometry disclosed therein. Withdrawal of the rejections is respectfully requested.

The Office Action admits that Marrs et al. does not disclose "using a fiber reinforced encapsulation material." (Final Office Action at page 2). The Office Action next appeals to Goldstein to fill this deficiency. Goldstein is concerned, however with a complicated, two-phase flow that cannot mix at the boundary layer 60. Goldstein's structure illustrates a two-phase, boundary-layer structure that could not be formed in Marrs' structure because of the complex geometry that would need to be filled with his two-phase encapsulant materials 46 and 48 (see, e.g., FIGs. 5 and 6. Because Goldstein's adhesive, two-phase encapsulant structure could not be sustained during manufacture when applied to Marrs' BGA 500 (FIG. 5), withdrawal of the rejection is respectfully requested.

Applicant notes that claims 2, 3, 5, 9 , and 11 depend from claim 1 and are therefore also not unpatentable over the cited references. Withdrawal of the rejections is respectfully requested.

Claims 2 and 3 add limitations of fiber size and aspect ratio, respectively. The Office Action admits that Goldstein does not recite fiber lengths, and cites to case law regarding size ranges that "overlap or lie inside ranges disclosed by the prior art." (Office Action, page 3, citation omitted). Goldstein discloses no ranges at all, and the Office Action admits that Marrs does not even disclose fibers. Thus a prima facie case of obviousness has not been established since there are no ranges disclosed in the cited references. Withdrawal of the rejections is respectfully requested.

Claim 11 teaches a metallization that is built up over the package core. Marrs teaches a bump 504 on the substrate 502. But there remains no reasonable expectation of success by the combination of Marrs with Goldstein, as set forth above. Applicant respectfully asserts that these claims are allowable over the cited references. Withdrawal of the rejections is respectfully requested.

Claims 9 and 10 claim specific materials. Because the combination of Marrs with Goldstein does not teach all the claim elements, and because there is no reasonable expectation

of success by the combination of Marrs with Goldstein, as set forth above, Applicant respectfully asserts that these claims are allowable over the cited references. Withdrawal of the rejections is respectfully requested.

Claim 5 was also rejected under 35 USC § 103(a) as being unpatentable over Marrs et al. in view of Goldstein et al. and further in view of Sawada et al. (U.S. 5,424,250). ). Applicant respectfully traverses this rejection and requests the Office to consider the following.

Sawada teaches that transfer molding is not contemplated for his technology (e.g. see column 6, lines 63-68), and further, the attempt to transfer mold a cloth is technologically difficult if not impossible. Sawada thus teaches a structure that cannot include "a package core having ... a microlectronic die located within the opening of said package core; and a fiber reinforced encapsulation material within the opening of the package core ...." (Claim 1). Further, since Sawada's technology is specifically directed toward avoiding bubbles, the attempt to even pressure mold the sheets taught in Sawada, would result in likely bubbles in the hole 509 of Marrs et al. Because Sawada's technology is inimical to Marrs' technology, the reasonable expectation of success to achieve a combination of Marrs with Sawada can come only from Applicant's disclosure.

Claim 5 claims specific materials. Because the combination of Marrs with Goldstein and Sawada does not teach all the claim elements, and because there is no reasonable expectation of success by the combination of Marrs with Goldstein and Sawada, as set forth above, Applicant respectfully asserts that these claims are allowable over the cited references. Withdrawal of the rejections is respectfully requested.

*Conclusion*

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney John Greaves at 801-278-9171, or the below-signed attorney at 612-349-9592, to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

INTEL CORPORATION ET AL.

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
Attorneys for Intel Corporation
P.O. Box 2938
Minneapolis, Minnesota 55402
(612) 349-9592

Date June 20, 2005 By Ann M. McCrackin

Ann M. McCrackin
Reg. No. 42,858

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Mail Stop RCE,20 Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 20th day of June 2005.

John P. Gustav-Wrathall

Name

Signature